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APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A
FILING DATE.

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FILING DATE: November 04, 2003

RELATED PCT APPLICATION NUMBER: PCT/US04/36732

Certified by



Jon W. Dudas

Acting Under Secretary of Commerce
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PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

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| INVENTOR(S) | | |
|--|-------------------------------------|---|
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| David J | Oles | San Marcos, Texas |
| Additional inventors are being named on the _____ separately numbered sheets attached hereto | | |
| TITLE OF THE INVENTION (500 characters max) | | |
| Optimizing Output Speed and Replenishment | | |
| Direct all correspondence to: CORRESPONDENCE ADDRESS | | |
| <input checked="" type="checkbox"/> Customer Number: | 23309 | |
| OR | | |
| <input type="checkbox"/> Firm or Individual Name | | |
| Address | | |
| Address | | |
| City | State | Zip |
| Country | Telephone | Fax |
| ENCLOSED APPLICATION PARTS (check all that apply) | | |
| <input checked="" type="checkbox"/> Specification Number of Pages 12 | <input type="checkbox"/> | CD(s), Number _____ |
| <input type="checkbox"/> Drawing(s) Number of Sheets _____ | <input checked="" type="checkbox"/> | Other (specify) Postcard |
| <input checked="" type="checkbox"/> Application Date Sheet. See 37 CFR 1.76 2 pages | | |
| METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT | | |
| <input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. | FILING FEE Amount (\$) | |
| <input type="checkbox"/> A check or money order is enclosed to cover the filing fees. | | |
| <input checked="" type="checkbox"/> The Director is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number: 11-0851 | \$80.00 | |
| <input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached. | | |
| The Invention was made by an agency of the United States Government or under a contract with an agency of the United States Government. | | |
| <input checked="" type="checkbox"/> No. | | |
| <input type="checkbox"/> Yes, the name of the U.S. Government agency and the Government contract number are: _____ | | |

Respectfully submitted,

Matthew J. Booth

[Page 1 of 2]

Date 11/04/2003

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(if appropriate) _____

Docket Number. 65825.0131

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USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

This collection of information is required by 37 CFR 1.51. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop Provisional Application, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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**In the United States Patent & Trademark Office
Provisional Patent Application under 37 CFR 1.53(c)**

Inventor(s) Oles
Serial No.: New Application
Filed: -
For: Optimizing Output Speed And Replenishment
Docket No.: 65825.0131

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Description Of The Invention

2 [01] Field of the Invention

3 [02] The present invention relates generally to load balanced production and more
4 specifically it relates to a methodology to optimize output speed and replenishment for
5 improving the economics and performance characteristics for fulfillment devices.

6 [03] Description of the Prior Art

7 [04] It can be appreciated that load balanced production have been in use for years.
8 Typically, load balanced production are comprised of digital photography kiosks, or
9 other products that utilize manufacturing equipment that contain non-refillable
10 consumables.

11 [05] The main problem with conventional load balanced production are when
12 deployed in a self service environment the consumables are difficult to maintain. Unlike
13 a coke machine, where consumables can be "topped off," the systems must be
14 maintained on a timely fashion to keep the systems operational. Changing the
15 consumables before they are exhausted increases the operating costs of the unit. Not
16 changing the consumables before they are exhausted means that the system will
17 always reach a state where it is not usable by a consumer (by being out of
18 consumables to produce the desire product). Another problem with conventional load
19 balanced production are that if a second output device is added to the system and the
20 second output device is used after the first output device is exhausted of consumables,
21 which allows a maintenance visit to take place without waste of consumables, you lose
22 the production speed advantages of having two units. Another problem with
23 conventional load balanced production are if you alternate two or more output devices

1 to increase output production you will still have situations where consumable material
2 must be replaced before it is exhausted, or you will have situations where the system is
3 unusable.

4 [06] While these devices may be suitable for the particular purpose to which they
5 address, they are not as suitable for improving the economics and performance
6 characteristics for fulfillment devices such as photography kiosks. The main problem
7 with conventional load balanced production are when deployed in a self service
8 environment the consumables are difficult to maintain. Unlike a coke machine, where
9 consumables can be "topped off," the systems must be maintained on a timely fashion
10 to keep the systems operational. Changing the consumables before they are exhausted
11 increases the operating costs of the unit. Not changing the consumables before they
12 are exhausted means that the system will always reach a state where it is not usable by
13 a consumer (by being out of consumables to produce the desire product). Another
14 problem is that if a second output device is added to the system and the second output
15 device is used after the first output device is exhausted of consumables, which allows a
16 maintenance visit to take place without waste of consumables, you lose the production
17 speed advantages of having two units. Also, another problem is if you alternate two or
18 more output devices to increase output production you will still have situations where
19 consumable material must be replaced before it is exhausted, or you will have
20 situations where the system is unusable.

21 [07] In these respects, the methodology to optimize output speed and replenishment
22 according to the present invention substantially departs from the conventional concepts
23 and designs of the prior art, and in so doing provides an apparatus primarily developed

1 for the purpose of improving the economics and performance characteristics for
2 fulfillment devices.

3 [08] Summary Of The Invention

4 [09] In view of the foregoing disadvantages inherent in the known types of load
5 balanced production now present in the prior art, the present invention provides a new
6 methodology to optimize output speed and replenishment construction wherein the
7 same can be utilized for improving the economics and performance characteristics for
8 fulfillment devices.

9 [10] The general purpose of the present invention, which will be described
10 subsequently in greater detail, is to provide a new methodology to optimize output
11 speed and replenishment that has many of the advantages of the load balanced
12 production mentioned heretofore and many novel features that result in a new
13 methodology to optimize output speed and replenishment which is not anticipated,
14 rendered obvious, suggested, or even implied by any of the prior art load balanced
15 production, either alone or in any combination thereof.

16 [11] To attain this, the present invention generally comprises a system that utilizes
17 the individual characteristics of a given output device to optimize the time between
18 service visits to replenish consumables and to provide increased production by utilizing
19 both devices when possible. The strategy is to have output devices produce at a ratio to
20 each other to maximize production capabilities when both devices have media and to
21 ensure that a device has sufficient media to maintain system operation when one
22 device is exhausted of media and awaiting service. Assuming two devices have the
23 same storage capacity, a second device will produce a disproportionate amount of

1 production compared to a first device until it reaches 2 to 1 ratio of remaining
2 consumables with a first device. The initial ratio is achieved when the amount of
3 consumables in the first device, minus the second device equals half of the amount of
4 consumable material available when each device is full. Once a 2 to 1 ratio has been
5 achieved the ratio will be maintained through alternating production. When the second
6 device is exhausted of consumables the first device will produce all fulfilled items.
7 When the second device is maintained (refilled) it will produce output at a
8 disproportionate amount to the first device until a 2 to 1 ratio is regained (device 2 will
9 now have 2 times the media of device one) The ratio is regained when the amount of
10 consumables in the second device, minus the first device equals half of the amount of
11 consumable material available when an individual device is full. This workflow continues
12 in an alternating fashion.

13 [12] There has thus been outlined, rather broadly, the more important features of the
14 invention in order that the detailed description thereof may be better understood, and in
15 order that the present contribution to the art may be better appreciated. There are
16 additional features of the invention that will be described hereinafter.

17 [13] In this respect, before explaining at least one embodiment of the invention in
18 detail, it is to be understood that the invention is not limited in its application to the
19 details of construction and to the arrangements of the components set forth in the
20 following description or illustrated in the drawings. The invention is capable of other
21 embodiments and of being practiced and carried out in various ways. Also, it is to be
22 understood that the phraseology and terminology employed herein are for the purpose
23 of the description and should not be regarded as limiting.

1 [14] A primary object of the present invention is to provide a methodology to optimize
2 output speed and replenishment that will overcome the shortcomings of the prior art
3 devices.

4 [15] An object of the present invention is to provide a methodology to optimize output
5 speed and replenishment for improving the economics and performance characteristics
6 for fulfillment devices.

7 [16] Another object is to provide a methodology to optimize output speed and
8 replenishment that is economically serviced and allows for unattended operation.

9 [17] Another object is to provide a methodology to optimize output speed and
10 replenishment that utilizes two or more output devices in a fashion that optimizes
11 production capability while preserving the service advantages.

12 [18] Other objects and advantages of the present invention will become obvious to
13 the reader and it is intended that these objects and advantages are within the scope of
14 the present invention.

15 [19] To the accomplishment of the above and related objects, this invention may be
16 embodied in the form illustrated in the accompanying drawings, attention being called to
17 the fact, however, that the drawings are illustrative only, and that changes may be
18 made in the specific construction illustrated.

19 [20] This disclosure illustrates a methodology to optimize output speed and
20 replenishment, which comprises a system that utilizes the individual characteristics of a
21 given output device to optimize the time between service visits to replenish
22 consumables and to provide increased production by utilizing both devices when
23 possible. The strategy is to have output devices produce at a ratio to each other to

1 maximize production capabilities when both devices have media and to ensure that a
2 device has sufficient media to maintain system operation when one device is exhausted
3 of media and awaiting service. Assuming two devices have the same storage capacity,
4 a second device will produce a disproportionate amount of production compared to a
5 first device until it reaches 2 to 1 ratio of remaining consumables with a first device. The
6 initial ratio is achieved when the amount of consumables in the first device, minus the
7 second device equals half of the amount of consumable material available when each
8 device is full. Once a 2 to 1 ratio has been achieved the ratio will be maintained through
9 alternating production. When the second device is exhausted of consumables the first
10 device will produce all fulfilled items. When the second device is maintained (refilled) it
11 will produce output at a disproportionate amount to the first device until a 2 to 1 ratio is
12 regains (device 2 will now have 2 times the media of device one) The ratio is regained
13 when the amount of consumables in the second device, minus the first device equals
14 half of the amount of consumable material available when an individual device is full.
15 This workflow continues in an alternating fashion.

16 [21] The strategy is to have output devices produce at a ratio to each other to
17 maximize production capabilities when both devices have media and to ensure that a
18 device has sufficient media to maintain system operation when one device is exhausted
19 of media and awaiting service.

20 [22] Assuming two devices have the same storage capacity, a second device will
21 produce a disproportionate amount of production compared to a first device until it
22 reaches 2 to 1 ratio of remaining consumables with a first device. The initial ratio is

1 achieved when the of consumables in the first device, minus the second device equals
2 half of the amount of consumable material available when each device is full.

3 [23] Once a 2 to 1 ratio has been achieved the ratio will be maintained through
4 alternating production.

5 [24] When the second device is exhausted of consumables the first device will
6 produce all fulfilled items.

7 [25] When the second device is maintained (refilled) it will produce output at a
8 disproportionate amount to the first device until a 2 to 1 ratio is regained (device 2 will
9 now have 2 times the media of device one) The ratio is regained when the amount of
10 consumables in the second device, minus the first device equals half of the amount of
11 consumable material available when an individual device is full.

12 [26] This workflow continues in an alternating fashion.

13 [27] As to a discussion of the manner of usage and operation of the present
14 invention, the same should be apparent from the above description. Accordingly, no
15 further discussion relating to the manner of usage and operation will be provided.

16 [28] With respect to the above description then, it is to be realized that the optimum
17 dimensional relationships for the parts of the invention, to include variations in size,
18 materials, shape, form, function and manner of operation, assembly and use, are
19 deemed readily apparent and obvious to one skilled in the art, and all equivalent
20 relationships to those illustrated in the drawings and described in the specification are
21 intended to be encompassed by the present invention.

22 [29] Therefore, the foregoing is considered as illustrative only of the principles of the
23 invention. Further, since numerous modifications and changes will readily occur to

1 those skilled in the art, it is not desired to limit the invention to the exact construction
2 and operation shown and described, and accordingly, all suitable modifications and
3 equivalents may be resorted to, falling within the scope of the invention.

4 [30] Abstract Of The Disclosure

5 [31] A system to optimize output speed and replenishment for improving the
6 economics and performance characteristics for fulfillment devices. The inventive device
7 includes a system that utilizes the individual characteristics of a given output device to
8 optimize the time between service visits to replenish consumables and to provide
9 increased production by utilizing both devices when possible. The strategy is to have
10 output devices produce at a ratio to each other to maximize production capabilities
11 when both devices have media and to ensure that a device has sufficient media to
12 maintain system operation when one device is exhausted of media and awaiting
13 service. Assuming two devices have the same storage capacity, a second device will
14 produce a disproportionate amount of production compared to a first device until it
15 reaches 2 to 1 ratio of remaining consumables with a first device. The initial ratio is
16 achieved when the amount of consumables in the first device, minus the second device
17 equals half of the amount of consumable material available when each device is full.
18 Once a 2 to 1 ratio has been achieved the ratio will be maintained through alternating
19 production. When the second device is exhausted of consumables the first device will
20 produce all fulfilled items. When the second device is maintained (refilled) it will
21 produce output at a disproportionate amount to the first device until a 2 to 1 ratio is
22 regained (device 2 will now have 2 times the media of device one) The ratio is regained
23 when the amount of consumables in the second device, minus the first device equals

- 1 half of the amount of consumable material available when an individual device is full.
- 2 This workflow continues in an alternating fashion.

1 **Claims**

2 [32] We claim the following invention:

3 1. The invention as described and illustrated in this disclosure.

2. A system to optimize output speed and replenishment for improving the economics and performance characteristics for fulfillment devices. The inventive device includes a system that utilizes the individual characteristics of a given output device to optimize the time between service visits to replenish consumables and to provide increased production by utilizing both devices when possible. The strategy is to have output devices produce at a ratio to each other to maximize production capabilities when both devices have media and to ensure that a device has sufficient media to maintain system operation when one device is exhausted of media and awaiting service. Assuming two devices have the same storage capacity, a second device will produce a disproportionate amount of production compared to a first device until it reaches 2 to 1 ratio of remaining consumables with a first device. The initial ratio is achieved when the amount of consumables in the first device, minus the second device equals half of the amount of consumable material available when each device is full. Once a 2 to 1 ratio has been achieved the ratio will be maintained through alternating production. When the second device is exhausted of consumables the first device will produce all fulfilled items. When the second device is maintained (refilled) it will produce output at a disproportionate amount to the first device until a 2 to 1 ratio is regained (device 2 will now have 2 times the media of device one) The ratio is regained when the amount of consumables in the second device, minus the first device equals

- 1 half of the amount of consumable material available when an individual device is full.
- 2 This workflow continues in an alternating fashion.

APPLICATION DATA SHEET

Electronic Version v14

Stylesheet Version v14.0

| | | |
|---|---|---------|
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